Management of Acute Febrile Respiratory Viral Infections: Infection Control Protocols

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Audience (tick all that apply) Trust staff NHS General public

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Summary
This is an updated standard infection control policy for management of acute viral respiratory tract infections in hospital and should be read in conjunction with standard and isolation precautions, Pandemic and Avian Influenza policies. It highlights alert systems for suspect cases, diagnosis and management criteria. The major change is the advice for the use of Synagis® for the passive immunization against RSV.
Summary of changes
The policy highlights the standard precautions used when dealing with cases of viral respiratory tract infections in hospital. Viral infections of the respiratory tract are very common and are usually acquired and managed in the community. This policy focuses on the severe end of the spectrum when a patient requires hospital admission. It also covers unusual or new infections to which there is limited or no immunity in the population and measures necessary to stop its’ spread within hospitals. Pandemic and Avian Influenza are not covered here as there are detailed trust wide plans in place.
The policy is updated in the management/prevention RSV in vulnerable groups using monthly passive immunization with a new monoclonal antibody Synagis®

Action needed and owner of action
- In the event of a case admitted to BNHFT with acute severe viral respiratory tract infections, staff assessing the patient before admission, on arrival to hospital and throughout the admission period, are responsible for ensuring that they are familiar with this policy and standards of care required to protect themselves and other patients in contact with the infectious case. They are also responsible for informing the infection prevention and control team (IPCT)
- The IPCT together with relevant departments will issue reminders and press releases for the patients, the staff and the general public. The team is responsible for updating this policy.
- The IPCT is responsible for training staff at induction and update sessions on basic standards stated in this policy. The team is responsible for monitoring case management and audit of the overall compliance
- The Consultant in communicable diseases control (CCDC) is responsible for overseeing the case management and ensuring appropriate precautions are in place to contain the infection if it is a highly contagious virus or part of an outbreak
- The clinical team responsible for the case/cases should inform the infection prevention and control team as soon as possible. The CCDC should be notified if highly contagious virus or unusual presentation or complicated by meningitis
- Methods and data used for training and table top exercise for pandemic flu are designed to be adaptable to other similar infectious occurrences e.g. highly pathogenic or highly contagious respiratory infections
- The occupational health department is responsible for staff immunisation and occupational advice and management of infections among staff
- Managers are responsible for ensuring adequate supplies are in place or easily accessible e.g. masks, gloves etc. They should liaise directly with the occupational health department regarding infected staff

Monitoring & Audit
- Monitoring will be through case based assessment by the IPCT and aggregate audit over a period of time (depends on number of cases admitted over time). The CCDC will monitor cases as part of any wider outbreaks locally or nationally
- Monitoring of Bronchiolitis cases assessed/admitted to BNHFT will be monitored by child health department
- Audit standards: (100% compliance)
  - Are clinical staff aware and able to comply with this policy including vaccination
Are patients with severe respiratory viral infections being managed according to this policy

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Purpose of the Policy

This policy is written to encompass all standards and practices that are essential for managing a single cases or clusters of acute viral respiratory infections. It is closely linked to admission criteria flow charts, standard precautions, major outbreak control plan, Pandemic Flu plan, SARS policy and Isolation precautions standards.

1.0 Introduction

Respiratory viruses can infect any age group although the severe complications of such infection are often restricted to children and the elderly. These viruses are most commonly transmitted by airborne droplets or nasal secretions and can lead to a wide spectrum of illness. In the UK many of these viruses are seasonal in their activity and tend to circulate at higher levels during the winter months.1

Several viruses are capable of causing such seasonal viral infections e.g. Adenovirus, Respiratory Syncytial Virus (RSV), Influenza and parainfluenza (Flu), rhinovirus, certain coronaviruses, coxsackievirus and human metapneumovirus. The commonest are seasonal Influenza and RSV.

RSV is the commonest cause of severe respiratory illness such as bronchiolitis (inflammation of the bronchioles) in young children aged less than 2 years. It is also the commonest cause of hospital admissions due to acute respiratory illness in young children.

RSV infections may be overlooked in older children and adults. Several studies have shown that RSV causes severe respiratory illness in elderly people and that outbreaks are associated with higher death rates. Peak numbers of RSV infections are reported in December and January every winter, although the size of the peak varies from winter to winter.1

The Health Protection Agency monitors levels of RSV and Influenza activity in the UK. This information is included in the HPA weekly Influenza Report, which is published throughout the winter period (see HPA website www.hpa.org.uk/infection).

Child Health department has separate, detailed guidelines for management of acute Bronchiolitis (see appendix 1)

2.0 Transmission

Respiratory viruses are transmitted by large droplets and by secretions, i.e. by touching an infected person and then touching eyes, nose or mouth. They can survive on surfaces or objects for about 4-7 hours. Transmission can be prevented through standard infection control practices such as hand washing.

The incubation period is short at about three to five days.
3.0 Seasonal variation

In temperate climates such as the United Kingdom, RSV occurs regularly each year. Epidemics generally start in November or December and last for four to five months, peaking over the Christmas and New Year period. The sharp winter peak varies little in timing or magnitude, in contrast to influenza virus infection which is much less predictable in its timing. Influenza usually peaks between December and March in the Northern hemisphere.

4.0 Who is at risk?

Who is most at risk of developing an infection?

For most people, RSV infection causes a respiratory illness that is generally mild. For a small number of people who are at risk of more severe respiratory disease, RSV infection might cause pneumonia or even death. RSV is best known for causing bronchiolitis in infants. Bronchiolitis occurs when the tiny airways leading to the lungs, called bronchioles, become inflamed and fill with mucus, making it difficult for a child to breathe. Over 60% of children are infected by their first birthday, and over 80% by two years of age. The antibodies that develop following early childhood infection do not prevent further RSV infections throughout life. The full extent to which adults are affected by RSV remains unknown.

With regard to influenza, the young have a greater risk of being infected because they have not developed immunity to the virus. The elderly have a greater risk of the severe complications of infection such as pneumonia, because they often have underlying diseases, which reduce their resistance to infection. The immune response may also be less effective in elderly people.

Who is most at risk of developing severe illness?

The very young (less than 1 year of age) and the elderly are at the greatest risk. While most RSV infections usually cause mild illness, infants aged less than 6 months frequently develop the most severe disease (bronchiolitis and pneumonia), which may result in hospitalisation. Children born prematurely, or with underlying chronic lung disease, and the elderly with chronic disease are also at increased risk of developing severe disease.

The high-risk groups for flu include individuals whose respiratory, cardiac or immune systems make them more vulnerable to flu and more likely to suffer severe illness.

5.0 Clinical presentation

RSV infection causes symptoms similar to a cold, including rhinitis (runny nose, sneezing or nasal congestion), cough, and sometimes fever. Ear infections and croup (a barking cough caused by inflammation of the upper airways) can also occur in children.

Influenza or 'flu' symptoms include headache, fever, cough, sore throat, aching muscles and joints. There is a wide spectrum of severity of illness ranging from minor symptoms through to pneumonia and death.
Other respiratory viruses have similar presentation.

**Case definition:** A person presenting to hospital with sudden onset of: high fever (>38ºC) and cough, difficulty breathing, sore throat or rhinorhoea or death due to an unexplained respiratory illness with autopsy findings demonstrating the findings of a severe viral respiratory tract infection or ARDS.

**6.0 Diagnosis**

Assessment of the clinical presentation is usually helpful in establishing the diagnosis. Laboratory investigations of respiratory secretions for the presence of a respiratory virus should be done to establish the diagnosis. Serological tests are helpful for epidemiological monitoring but are antibody based and require paired sera (taken two weeks apart) and demonstration of at least two fold rise in antibody level.

During the season a laboratory diagnosis is not always necessary as patients can be managed without it especially for RSV.

**7.0 Vaccination**

There are no vaccines against RSV available at the moment. Some pharmaceutical companies are testing vaccines for infants, older children with underlying chronic lung disease, and the elderly, but it is likely to be some time before these become available.

Recent guidance has been published in “The Green book” for the passive immunisation against RSV using Synagis® (Palivizumab) which is a humanised monoclonal antibody (IgG1,κ) produced using recombinant DNA techniques in mouse myeloma host cells. It provides passive immunity against RSV.

Synagis® should be considered during the RSV season for the following groups of infants:
- all children under the age of 24 months who have severe combined immunodeficiency syndrome (SCID), until immune reconstituted and;
- all children who are on long term ventilation (LTV) aged under 12 months at the start of the RSV season and,
- all children who are on LTV aged under 24 months at the start of the RSV season with additional co-pathology (heart disease/pulmonary hypertension, intrinsic lung disease (as reflected by oxygen dependency).

SCID is the most severe form of inherited deficiency of immunity. Affected infants are unable to mount either T-cell responses or produce antibody against infectious agents. The definition of LTV is ‘any child who when medically stable, continues to require a mechanical aid for breathing, after an acknowledged failure to wean three months after the institution of ventilation’ (Jardine and Wallis, 1998).

Where clinical judgment of other individual patient circumstances strongly suggests that prophylaxis would prevent serious RSV infection in infants who are at particular risk of complications from RSV, use of Synagis® could be considered during the RSV season.

Synagis® should be given as a maximum of five doses given one month apart from the beginning of the RSV season (beginning of calendar week 40 i.e. beginning of October). However, where the course of treatment begins later in the RSV season
(e.g. where infants are born within the RSV season) up to five doses should be given one month apart until the end of calendar week 8 (i.e. the end of February). As the risk of acquiring RSV infection while in the neonatal unit is extremely low, infants in neonatal units who are in the appropriate risk groups should only begin Synagis® treatment 24 to 28 hours before being discharged from hospital. Those infants that have begun a course of Synagis® treatment but are subsequently hospitalized should continue to receive Synagis® whilst they remain in hospital.
Synagis® provides short-term protection against RSV and is recommended to all new at risk infants at the start of each new RSV season (as described above). If, during the RSV season, an infant is identified to be at risk but there is no reliable history of previous Synagis® prophylaxis within the season, then doses should be started and administered monthly for the remainder of the RSV season but need not be given after the end of calendar week 8. Where courses have been interrupted the doses should be restarted and administered monthly for the remainder of the RSV season but need not be given after the end of calendar week 8.

There is an influenza vaccine which is updated annually to allow for the rapid viral mutations (antigenic shift and drift). It is offered to at risk patients and front line staff as per the immunisation against infectious diseases guidelines².

8.0 Treatment and Advice

For RSV: no specific treatment is suitable for general use, and treatment is therefore aimed at supporting the patient and alleviating symptoms. Ribavirin is an anti-viral drug licensed for treatment of RSV infection which is sometimes used in the
management of severe illness. Its effectiveness is not established, and it may be associated with toxicity.

For Influenza: bed rest, rehydration and analgesics are essential (paracetamol for all ages, aspirin may be taken by adults).

Most influenza-like illnesses are self-limiting and may be caused either by influenza or other viruses/pathogens. It is best to treat the infection at home until the person is well enough to return to normal activities. Medical advice should be sought only if symptoms become severe or last more than about a week. Those with chronic or long-standing illness may need medical attention earlier.

NICE issued guidance on use of antivirals for treatment of influenza which pertains only to circumstances where it is known that either influenza A or influenza B is circulating in the community. Zanamivir and oseltamivir are not recommended for the treatment of influenza in children or adults unless they are considered to be ‘at risk’.

At-risk adults and children are defined in the guidance are those who are in at least one of the following groups:

People who:
- have chronic respiratory disease (including asthma and chronic obstructive pulmonary disease)
- have significant cardiovascular disease (excluding people with hypertension only)
- have chronic renal disease
- are immunocompromised
- have diabetes mellitus
- are aged 65 years or older.

9.0 Human metapneumovirus

Human metapneumovirus (hMPV) is a recently discovered respiratory pathogen closely related to Respiratory Syncytial Virus (RSV). It was first discovered in 2001 in The Netherlands. It is associated with a range of illnesses from mild infection to severe bronchiolitis and pneumonia, and wheezing. Like RSV, hMPV is thought to be a seasonal virus occurring mostly during the winter months. However, the number of people who suffer from hMPV each year is still to be determined.

HMPV infection occurs in infants and young children with studies suggesting that nearly everyone has had hMPV infection by the age of 5 years old. However, hMPV has also been found in older children and adults suggesting re-infection may occur later on in life.

10.0 Infection Control Measures Precautions

- If a case arrives in the emergency department (ED) and is found to be suffering from a severe viral illness, please call the Microbiologist immediately to discuss management. If out of hours they can be contacted through switchboard.
- All suspected cases should be seen in ED in the designated cubicles or in a side room in MAU. The room should have Oxygen supply and suction facility if possible.
After initial assessment and management, Patients with suspected severe viral respiratory disease should be admitted to a single room with separate toilet facility without delay and using the recommendations below. If such facilities are not available, the infection prevention and control team or the on call microbiologist should be contacted.

**Table 1: Summary of the Infection control precautions indicated**

<table>
<thead>
<tr>
<th>Contact Precautions</th>
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<td>Hand washing</td>
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<td>Gloves</td>
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<td>Masks</td>
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<td>Eye/face protection</td>
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<td>Apron/gown</td>
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<td>Equipment</td>
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<td>Cleaning</td>
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<tr>
<td>Linen</td>
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<tr>
<td>Isolation room</td>
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**GP referrals:**
- Patients should be seen in their own home for initial assessment if possible
- Patients should be cared for in their homes if possible as not all cases are severe enough to warrant referral
- If the patient requires hospital admission, The GP should refer to on call team (inform ED department of diagnosis) (see infection control admission criteria)

**In ED:**
- When there is a known local/national outbreak, a sign should be clearly displayed asking patients to report immediately to reception if they have symptoms consistent with a severe respiratory viral infection (will be supplied by the IPCT). Symptomatic patients should be admitted to a cubicle or side room immediately.
- The names of all the people who have been in close contact with a probable or a suspect case of a severe or an unusual viral infection should be recorded for reference and further action if indicated. This includes patients in the waiting room if there was a delay of more than 20 minutes. A standard form will be supplied by the IPCT and the nurse in charge should ensure staff and patient contacts are registered if they fulfill the 20 min criteria
- Only one doctor and one nurse wearing recommended personal protective equipment should care for the patient. If not possible the number should be kept to the minimum.
• Relatives can be allowed in the examination room. They should wear an apron, gloves and masks if advised by the IPCT.
• The patient should be kept in the cubicle at all times and should not be allowed to wander to other areas.
• Full precautions as described below should be followed.

On the ward:

• The patient should be isolated in a single room with own bathroom facilities with door kept shut at all times. If the patient requires ITU admission they should be admitted to one of the pressure controlled side rooms. It is essential to ensure that the pressure switch by the nurses station is pointing to negative pressure
• The use of a filter mask (FFP3) might be recommended by the infection prevention and control team in case of a highly contagious or a very severe viral infection. If the patient is coughing and contact is prolonged, it is recommended that staff wear a mask. A surgical mask with a fluid repellent shield is adequate for initial assessment of such cases.

Equipment outside the room:

• Masks: if advised by IPCT.
• Plastic aprons or long sleeve fluid repellent gown for use as per contact precautions above
• latex or similar non-latex gloves with tight fitting cuffs for contact with the patient or their environment
• Eye protection to be used as per table above
• Linen bag
• Alcohol gel

Equipment inside the room: Should be kept to the minimum

• Designated stethoscope
• Hand washing sink and paper towels
• Yellow clinical waste bin
• Alcohol gel
• Alginate linen bag
• Sphygmomanometer
• Cleanable couch/trolley and chair

Staff:

As few staff as possible should have contact with the patient. Special attention should be paid to hand hygiene before and after every patient contact.

Protective clothing for staff: All should be worn before patient contact and disposed of before leaving the room

• All wounds should be covered in waterproof dressing/plaster
• Plastic apron or long sleeved disposable fluid repellent gown
• Eye protection if indicated
• Staff should avoid touching face when wearing protective equipment and before hand washing.
• Staff should remove uniform worn under protective clothing and shower after patient contact and before leaving the hospital if possible
• Uniforms laundered at home should be washed in a hot cycle (60°C or more). If can’t wash in a hot cycle, it is acceptable to wash at 40°C as long as followed by tumble drying cycle and ironing. This is a standard precaution for all infections and should be observed by all clinical staff who have close/direct contact with patients.

Laboratory samples:
The lab should be alerted before samples are sent to ensure prompt and appropriate processing.
The samples to be collected should include:
Respiratory samples: NPA, nose and throat swabs in viral transport medium.
Blood: 20 mls clotted sample to be repeated after 3 weeks (paired sera), blood cultures, 20 mls EDTA blood.
Urine: 20-30mls
Stool sample
Conjunctiva swab
All Pathology samples should be clearly labeled and handled as high risk. In the laboratory the samples will be handled as category 2 infections i.e. same as Hepatitis B or HIV

Patient transfer to another department:
Should be avoided whenever possible and as many investigations as possible should be done in the patients room. If unavoidable, the patient should wear a mask if possible.

Ambulance transfer:
Advice with regard to personal protective equipment required during transfer in an ambulance will depend on nature of viral infection. If a highly contagious virus is suspected/confirmed then the patient and the accompanying staff at the back of the ambulance should all wear appropriate FFP3 masks. They should also wear long sleeve water repellent gowns. The inside of the ambulance should be cleaned with Achtichlor (1000ppm) once the patient has left the vehicle.

Termination of isolation precautions:
The period of communicability of viral respiratory tract infections is usually shortly prior to and for the duration of the active disease. RSV shedding rarely persists for several weeks after clinical symptoms subside.
Patients should be nursed as per precautions set out in this policy until they are discharged or are deemed to be free of active disease. The clinical team looking after the patient should clearly document that in the patient’s notes.

Decontamination of equipment and room:

All disposable items should be disposed of as clinical waste into the yellow bag inside the room.

Any linen should be bagged in the alginate bag inside the room and put in the red linen bag outside the room. Sharps box should be disposed of as normal.

All other equipment, items and the floor should be washed/wiped with Achtichlor 1000ppm. Curtains should be changed.

Hypochlorite (Achtichlor) is the recommended disinfectant for environmental decontamination of areas where the infected patient has been in the hospital

Family contacts:

Should be kept to the minimum. CCDC might decide to discuss risks and possible prophylaxis with them in certain cases.

General considerations:

- Standard precautions including careful attention to hand hygiene.
- Standard precautions when handling any clinical waste which must be placed in leak-proof biohazard bags or containers and disposed of safely
- Laundry should be classified as infected.
- If more than two cases are admitted to hospital, then cohort nursing is recommended under the guidance of the infection prevention and control team and as per outbreak policy and escalation plan.
- It is not necessary to use disposable crockery or cutlery when caring for these patients in hospital.

11.0 Infection control Contacts:

Dr Nicki Hutchinson Consultant Microbiologist ext 3310 or via switchboard out of hours

Dr Fatima El Bakri Consultant Microbiologist ext 3305 or via switchboard out of hours

Dr Linda Booth CCDC on 01256 312249 or the on call CCDC via switchboard

The infection control nurses can be contacted on ext 6774 or bleep 2364
References

1. PHLS Position Paper: Prevention and treatment of Respiratory Syncytial Virus (RSV) infection*, 26 June 2001
2. Immunisation against Infectious diseases. DOH 2006
Appendix 1:

MATERNAL & CHILD HEALTH DIVISION

Guidelines for the Management of Acute Bronchiolitis

Date: September 2006

Author: Dr. P. Ilangovan, T. Le Flufy
Review Date: August 2008

During the winter months (October to end of February) and average of 2% of the UK infant population are admitted with Bronchiolitis\(^1,2,3\) with the peak incidents in December\(^1,2,3\). 10% of admissions for respiratory problems to the paediatric unit are for Bronchiolitis.

The actual numbers and the severity of the disease vary from year to year. Over the last five years our audits would suggest that approximately 80 children are admitted each year (with the exception of 2001 when the department saw 150 children)\(^4\). Children would have had or been exposed to Bronchiolitis in the first year of life and are less likely to develop significant symptoms later requiring admission.

The vulnerable group of children that have been identified from our previous years of audit\(^5,6\) are: ex premature babies, corrected age <6/12 and term infants <6/12, body weight <7Kg, children with chronic lung disease, compromised congenital heart disease and immunodeficiency primary and secondary and those who present with a history of apnoea.

Clinical Features\(^7,8\)

- Incubation period 4-6 days
- Coryza and congestion, often associated with low grade fever initially
- During a period of 2-5 days this may progress to involve the lower respiratory tract with subsequent development of cough, dyspnoea and wheezing. Usually the fever has resolved by the time the patient is brought to medical attention. After admission, the clinical condition may worsen before improvement occurs.
- Some children (especially very young) can present with apnoea as their initial symptom.
- Auscultation reveals Physical examination usually reveals minimal or no fever, clear coryza, nasal congestion with a typical Bronchiolitic wet cough, increased work of breathing, tachycardia, tachypnoea with or without nasal flaring and retractions.
- widespread end inspiratory fine crepitations and prolonged expiratory phase with occasional wheeze. The crepitations are not always initially audible.
Initial Assessment

This should include (Appendix A)

1. Work of breathing (respiratory rate, recession, grunting, use of accessory muscles, tracheal tug and nasal flaring), history of apnoea.

2. Effectiveness of breathing (pulse rate, oxygen Saturation, colour, general condition) - pre and postnasal suction.

3. Ability to feed and state of hydration.

4. Presence of risk factors, prematurity, <6/12, <7Kg and history of apnoea and other as above under vulnerable group

5. Finally, any adverse social factors (smoking, parental anxiety, lack of transport, telephone and overcrowding etc.).

Admission

Admission will depend on the severity of the clinical condition. Children are divided into three main groups based on their severity of illness. (Appendix B) ⁶

All will be assessed in Charlie's Day Unit by nursing and medical staff. (see attached sheet) and out of hours in G2 assessment room. (Appendix A).

If the children present after 10pm they should be assessed and admitted to the ward overnight even if they are deemed to be low risk.

The high risk group are those needing oxygen, not tolerating feeds, with increased work of breathing, history of apnoea etc.

The medium risk group will be divided with those who are medium-low or medium-high. This is decided after a period of observation on Charlie's Day Unit where feed volume is reduced, given more frequently and observations carried out (including oxygen saturations during feeds).

If oxygen saturations improve and the child tolerates the reduced feed volume these children will be classed as medium-low risk.

If oxygen saturations do not improve +/- feeds tolerated then the child will be placed in medium-high risk category and admitted to the ward.

Beware of children who are in the early part of their illness (i.e. less than three days) and are in the medium-low risk group. These children are at substantial risk of becoming worse.

Low risk are those who have mild disease, tolerating slightly reduced volume of feeds given more frequently and have no adverse social factors.
Diagnosis \(^{1,7,8}\)

Bronchiolitis is a clinical syndrome and the diagnosis is based on the following symptoms and signs: typical characteristics - wet cough, tachypnoea, respiratory distress, hyperinflation, widespread crepitations and expiratory wheeze.

Investigations:

1. Naso-Pharyngeal Aspirations

   The obtaining of NPA is no longer required \(^{10}\). Diagnosis is based on clinical findings. If the child does not progress as predicted or has atypical signs, then take an NPA both for virology (RSV, adeno & other viruses) and MC&S.

2. Chest X-Ray

   Research has shown that there is no correlation between radiological changes and clinical severity \(^{11}\).

   Please discuss the needs for chest X-Ray with the Middle Grade Staff/Consultant on call and document reason if performed.

Management:

Low Risk

The children in this group will remain in Charlie’s Day Unit until the parents have clear understanding and are happy with the plan for their child’s ongoing care.

They will be given a leaflet by Charlie’s Day Unit staff containing completed plan for feeding (Appendix C) and a parent assessment sheet for their use if they wish (Appendix D).

The child’s name will be entered on the appropriate day into the designated diary in Charlie’s Day Unit for follow up phone call. Children’s Community Nurse follow up request will be completed if there are social concerns but is NOT routine for this group.

Medium Risk

These children will be assessed by Charlie’s Day Unit staff over 4-6 hour period.

Their feeds will be reduced to 120ml/Kg and offered three hourly. Oxygen saturation in air will be recorded during feeding.
**Medium – Low Risk**

If feeds completed and saturation monitored 93% or above, discharge home with leaflet, *(Appendix C & D)* provided no adverse factors. Children’s Community Nurse referral will be made and appropriate contact number given to parents.

A follow up phone call will be made by Children’s Community Nurse after 24 hours at home - a visit if parents are anxious and a phone call or visit at 48 hours. If the condition has not improved, the child will return to Charlie’s Day Unit for re-assessment. If the condition has improved and the parents are reassured, a further phone call will be made at 5-7 days by the Children’s Community Nurse.

Staff must be aware that these children may be at the beginning of their illness and have the potential to deteriorate.

**Medium – High Risk**

Those infants who are not tolerating their feeds or maintaining their oxygen saturations will be admitted.

**High Risk**

All children who are assessed and fall into this group will automatically be admitted to G2. They do NOT need to stay in Charlie’s Day Unit for a period of observation.

At the end of their admission, they will be discharged home. A discussion will be made prior to discharge as to whether the family required a follow up phone call by the ward staff in 24 hours.

**Procedure Following Admission**

- The parents will be given the information leaflet on Bronchiolitis *(Appendix D)*
- The child will be nursed in a single cubicle or cohort nursed in a four bedded bay.
- All professionals participating in the care of the infant will wear plastic aprons when handling the infant and will be disposed of in the cubicle/bay. Hand washing is of paramount importance after handling each child if cross infection is to be avoided.
- Equipment care: all non-disposable items are removed from the bay or the cubicle prior to the child being admitted. The rest of the items are washed down with soap and water prior to being used again.
- Siblings & play room: please refer to the parent information leaflet *(Appendix F)*.
- A policy of minimal handling allowing optimum rest periods will be adopted for each child while maintaining close monitoring of vital signs and fluid balance. The main stay of treatment is supportive.
Oxygen Therapy

If oxygen saturation recordings fall below 93% in air, oxygen therapy will be commenced (see Child Health Oxygen therapy Guidelines)\(^2\).

Head box administration is preferred method for giving oxygen and air to maintain saturations above 93%. Nasal cannula can be used if oxygen requirements are less than 1 litre, which is the maximum flow rate via nasal cannula. Low flow meters must be used for accurate administration\(^2\).

If nasal secretions are dry these infants may benefit from the giving of 2-4 drops of 0.9% nasal saline 4 hourly to each nostril.

Oxygen Saturations (see Child Health Oxygen Saturation Monitoring Guidelines)\(^3\).

- Saturation recordings should be continuous if oxygen therapy is in progress.
- The correct probe size must be used. The probe site should be changed every 4 hours and the skin checked for redness or skin damage.
- As the child’s condition improves and the oxygen is reduced/stopped, saturation recordings may be reduced to 2-4 hourly or restricted to the period of feeding.

Positioning

Non cardiac babies with Bronchiolitis may benefit and can be safely nursed prone. Ensure non-invasive monitoring is in place.

Suction

Suction may be required to clear child’s nasal passages of secretions, which may increase infant’s respiratory distress and work of breathing. Excessive suction will increase production of mucus.

Fluids/Feeding Regime

Babies requiring head box oxygen to maintain saturation above 93% with respiratory rate >40 and marked respiratory distress (nasal flaring, tracheal tug and sternal recession, pale colour) should be commenced on IV fluids.

Fluids should be restricted to 2/3\(^{rd}\) maintenance initially\(^4\). Younger infants with Bronchiolitis are rarely fluid depleted. If the child (usually older infant) is clinically dehydrated then IV fluids should be given to correct this. IV fluids should continue until condition improves. Daily blood tests are required for U & E.

Orogastric tube may be used in children who are on nasal CPAP or those who are under a month of age.
NG feeds should be re-introduced hourly via an appropriate size NG tube as the child’s clinical condition improves (work of breathing and oxygen saturation) and IV fluids reduced as NG tolerated. NG feeds calculated at 100ml/Kg initially and increased to 120ml/Kg as condition improves. When the infant is tolerating 2 hourly NG tube feeds with no record of desaturation alternate tube and bottle feeds can be considered before increasing to 3 hourly feeds. In the event of the infant being breast fed, it may be necessary for mother to express milk initially for tube feeding.

**Physiotherapy**

Physiotherapy is not indicated for the majority of infants with uncomplicated Bronchiolitis and may induce falls in oxygen saturations with increased work of breathing.

Those children who are ventilated and have atypical progressions of the disease with collapse consolidation (usually right upper lobe) and chest X-Ray should receive chest physiotherapy during the recovery phase.

**Drug Therapy**

There is no evidence to show that the use of bronchodilators or steroids (inhaled or oral) alters the course of the disease.

**Ribavirin**

Clinical trials suggest that Ribavirin may have a role in the treatment of some infants with severe Bronchiolitis reducing the morbidity, duration of oxygen therapy, ventilation and length of stay. The reports have been conflicting in their beneficial effects in children who were previously otherwise well. Our current policy is not to use it in our population of patients but need to discuss individual cases with the consultant on call.

**Monitoring**

- As well as continuous saturation monitoring, pulse and respiration rate should also be recorded hourly, with four hourly temperature recording.
- The infant should be weighed on admission, Monday, Wednesday, Friday and on discharge.
- The decision to use respiratory support, nasal CPAP or ventilation will depend on overall clinical condition – work of breathing, oxygen requirements, irritability, lethargy and rarely on blood gas findings or oxygen saturation on its own.

**Follow-up:**

All children with a diagnosis of Bronchiolitis have a defined follow-up and are not offered open access to the unit.
**Low Risk**

These parents would receive a phone call from the CDU staff within 24 hours of discharge and a second phone call within 5-7 days.

**Medium-Low Risk**

These children will receive a phone call / home visit by the CCN team within 24 hours of discharge, followed by a telephone call within 48 hours of home visit with a further phone call within 5-7 days. Should they require a further visit, admission should be considered.

**Medium-High & High Risk**

These children will receive a follow-up phone call within 24 hours of discharge by the ward staff.

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